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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,399	12/03/2003	David Forehand	MEM 2657001	5565
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CARR LLP 670 FOUNDERS SQUARE 900 JACKSON STREET DALLAS, TX 75202			EXAMINER MITCHELL, JAMES M	
			ART UNIT 2813	PAPER NUMBER
			MAIL DATE 04/27/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/726,399

**Applicant(s)**

FOREHAND, DAVID

**Examiner**

JAMES M. MITCHELL

**Art Unit**

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12, 24, 26-33, 44, 46-53, 64, 66, 68-70, 72-81 and 83-87 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 24, 26-33, 44, 46-53, 64, 66, 68-70, 72-81 and 83-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to applicant's amendment filed July 14, 2009.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-12, 24,26-33,44,46-53,64,66,68-70,72-81 and 83-87 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in applicant's original disclosure for the negative limitation of excluding metallic housings. Rather applicant's specification on page 8 states that "metals can be used."

4. Claim 84, there is no support for sulfur hexafluoride. Contrary to applicant's assertion, there is hexafluoride is not mentioned on page 10, lines 16-25 of the specification.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3-5,8,24, 26, 27, 30, 32, 33, 44, 46,47,48, 50, 52, 53, 66, 68-70, 73, 75-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Gueissaz (U.S. 2001/0004085) in combination with Carley (U.S. 7,008,812).

8. Gueissaz (e.g. Fig. 20a-21) discloses:

(cl. 1, 24, 44, 66, 68, 69,70, 73, 79, 80) a method for packaging at least one microscopic device,/having a moveable region (e.g. sensor cavity) comprising: applying a sacrificial material ("sacrificial material, 7; Par. 0106) to at least one microscopic device (6); applying a layer of structural material (9) adjacent the sacrificial material, the layer of structural material forming a housing adjacent at least a portion of the sacrificial material; creating one or more apertures (10) in the housing of structural material to expose at least a portion of the adjacent sacrificial material, the apertures having and thus determining size and shape such that a removing material is able to pass through at least one of the apertures but a protective material cannot pass through (23 not

passing through holed; e.g. Fig. 21; Par .0107); removing the sacrificial layer (Par. 0106), wherein the housing of structural material with at least one aperture remains (Fig. 20B); depositing a protective material (23) adjacent the housing of structural material overlaying at least one aperture of the housing in amount sufficient to substantially close the aperture/partially in without entering the housing sufficiently to interfere with operation of the device; and curing the protective material (e.g. liquid deposited; Par. 0107) without being deposited on the device or any substrate underlying housing; and curing the protective material (e.g. becomes hardened to encapsulate device)

(cl. 26, 30, 46, 50, 75) the sacrificial material having a higher etch rate than structural material, removing comprising chemical etch (e.g. only sacrificial material removed; Par. 0072);

(cont. cl. 24) wherein the protective material flows into at least one aperture (23; Par. 0108; Fig. 21).sealing;

(cl. 11, 32, 52) structural layer between .2 and 10 microns (Par. 0093);

(cl. 77) further depositing a conductive material (e.g. "metal layer", 9/ alt. 17; Abstract);

(cl. 77, 78) further depositing a conductive material comprises depositing a protective material (e.g. "solder", 23 is conductive);

(cont. cl. 80) sacrificial first viscosity and liquid protective having a second viscosity (e.g. holes small enough to let sacrificial past, but not protective material; Par. 0106-0107).

9. Gueissaz does not disclose its structural or sealing material composed of non-metallic material or that its structural material is a photoresist or polyimide or wherein

the structural layer is selected from a group of Silicon Dioxide (SiO<sub>2</sub>) and Silicon Nitride (Si<sub>3</sub>N<sub>4</sub>).

10. Carley discloses its structural and sealing material being material non-metallic (Col. 5, Lines 20-24) and its structural material composed of a photoresist or polyimide (Col. 2, Lines 42-54) or selected from a group of Silicon Dioxide (SiO<sub>2</sub>) and Silicon Nitride (Si<sub>3</sub>N<sub>4</sub>) (Col. 4, Lines 28-29),

11. Because structural and sealing material made from the claimed materials are known in the art as evidenced by Carley above, its selection would have been obvious to one of ordinary skill in the art, since it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See eg. also *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 1743, 550 U.S. \_\_, 17 (2007) (finding that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense).

12. With respect to claims 32, 33, 52 and 53 Gueissaz does not explicitly disclose the selected thickness of the sacrificial or structural layer thickness is between .2 and about 10 microns.

13. However, applicant has not disclosed that the claimed thickness is for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. Hence the

limitation would have been obvious, since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

14. Claims 2, 7, 10-12, 64, 74 and 84-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Gueissaz (U.S. 2001/0004085) and Carley (U.S. 7,008,812) as applied to claim 1 and further in combination with Marrs (U.S. 5,485,037) and Plummer et al. (U.S. 4,480,975).

15. Modified Gueissaz further discloses protective material flowing into at least portion of aperture with the component being exposed to air (e.g. holes in structure expose component to air prior to being filled with protective material ), but does not explicitly disclose the material is cured/ allowed to harden or use of gas pressure that's at least 1Pascal and a temperature less than 600 degree or depositing protective material by allowing the protective material to flow into at least a portion of an aperture

16. However, Marrs discloses curing an electrically nonconductive sealing material (e.g. plastic "transfer molding"; Col. 5, Lines 50-52) while Plummer (Col. 3, Lines 3-40) teaches that transfer molding uses a gas pressure ranges of at least 1Pascal and a

temperature less than 600 degree allowing a material to flow into at least a portion of an aperture/cavity.

17. It would have been obvious to one of ordinary skill in the art to incorporate curing an electrically nonconductive material on the housing of Gueissaz at the claimed ranges in order to package the device by transfer molding as taught by Marrs (Col. 5, Lines 49-51).

18. Furthermore with respect to the claimed range or humidity percentage, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed temperature and curing ranges, since it has been held that where the general working conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

19. With respect to the selected thickness of claims 11 and 12 like the sacrificial or structural layer thickness is between .2 and about 10 microns. See paragraph 13 of this office action.

20. Claims 28, 29, 31, 49, 51 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Gueissaz (U.S. 2001/0004085) and Carley (U.S. 7,008,812) as applied to claim 24, 44 and 70 and further in combination with in combination with Yang et al. (U.S. 2004/0046835).



21. Modified Gueissaz does not appear to disclose the step of removing by sputter or plasma etching or ion beam milling.

22. Yang shows that plasma, sputter etching or ion beam milling or chemical etching is equivalent processes that form equivalent structures known in the art known.

Therefore, because these processes are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the use of for example a chemical etch instead of a plasma etch to remove material.

23. Moreover, use of the claimed etching or processes are one of a finite methods to solve the problem of removing material as evidenced by Yang. As such, it would have been obvious to one of ordinary skill in the art to pursue these etching/milling processes to remove material from selected areas. E.g. KSR Int'l v. Teleflex Inc., 127 S.Ct. 1727, 1743, 550 U.S. \_\_, 17 (2007) (finding that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense).

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art disclose in Leboutz (Vacuum Encapsulation of resonant devices using Permeable Polysilicon) discloses the sealing microdevices with insulating materials.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **JAMES M. MITCHELL** whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Landau can be reached on (571) 272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C. Landau/  
Supervisory Patent Examiner, Art  
Unit 2813

April 22, 2010  
/James M. Mitchell/  
Examiner, Art Unit 2813